

What is claimed is:

1. An image-sensing apparatus comprising:

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a solid-state image-sensing device composed of a plurality of pixels individually including photosensitive portions that generate electric signals in accordance with amount of light incident thereon, the solid-state image-sensing device operating selectively either in a first state in which the individual pixels output signals obtained by linearly converting the electric signals generated by the photosensitive portions thereof or in a second state in which the individual pixels output signals obtained by natural-logarithmically converting the electric signals generated by the photosensitive portions thereof; and

a generator for generating a switching signal for switching the solid-state image-sensing device between the first and second states.

2. An image-sensing apparatus as claimed in claim 1,

wherein the pixels of the solid-state image-sensing device individually include transistors to which the electric signals generated by the photosensitive portions are fed, and natural-logarithmically convert the electric signals generated by the photosensitive portions by exploiting a subthreshold characteristic of those transistors.

3. An image-sensing apparatus as claimed in claim 2,

wherein the solid-state image-sensing device is switched between the first and second states as a result of the switching signal generated by the generator causing a potential fed to the transistors of the individual pixels to vary.

4. An image-sensing apparatus as claimed in claim 1,
wherein the switching signal is a binary voltage signal.

5 5. An image-sensing apparatus as claimed in claim 1,
wherein the generator generates the switching signal on a basis of the signal
output from the solid-state image-sensing device.

10 6. An image-sensing apparatus as claimed in claim 1,
wherein the generator generates the switching signal in accordance with
brightness of a subject to be shot.

15 7. An image-sensing apparatus as claimed in claim 6,
wherein the generator, when the brightness of the subject to be shot is lower
than a predetermined threshold value, generates a switching signal that brings the
solid-state image-sensing device into the first state, and, when the brightness of the
subject to be shot is higher than the predetermined threshold value, generates a
switching signal that brings the solid-state image-sensing device into the second
state.

20 8. An image-sensing apparatus as claimed in claim 1, further
comprising:
an input member for receiving a manual operation from an operator,
wherein the generator generates the switching signal on a basis of the

manual operation received through the input member.

9. An image-sensing apparatus as claimed in claim 1, further comprising:

5 an input member for receiving a manual operation from an operator,

wherein the generator operates selectively either in a first mode in which it generates the switching signal on a basis of the manual operation received through the input member or in a second mode in which it generates the switching signal automatically on a basis of a predetermined shooting condition.

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10. An image-sensing apparatus as claimed in claim 9,

wherein the generator, when the input member is operated in the second mode, generates the switching signal preferentially on the basis of the manual operation received through the input member.

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11. An image-sensing apparatus as claimed in claim 1, further comprising:

a detector for detecting a brightness range of a subject to be shot,

20 wherein the generator generates the switching signal on a basis of the brightness range of the subject to be shot detected by the detector.

12. An image-sensing apparatus as claimed in claim 11,

wherein the generator, when the brightness range of the subject to be shot is narrower than a predetermined threshold value, generates a switching signal that

brings the solid-state image-sensing device into the first state, and, when the brightness range of the subject to be shot is wider than the predetermined threshold value, generates a switching signal that brings the solid-state image-sensing device into the second state.

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13. An image-sensing apparatus as claimed in claim 1,

wherein the generator generates the switching signal on a basis of at least one of a distance to a subject to be shot and a shooting magnification.

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14. An image-sensing apparatus as claimed in claim 1, further comprising:

an optical system having a variable focal length,

wherein the generator generates the switching signal on a basis of a focal length of the optical system.

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15. An image-sensing apparatus as claimed in claim 1, further comprising:

an optical system that is focused on a subject to be shot selectively at least either at a wide-angle side or at a telephoto side,

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wherein the generator generates the switching signal on a basis of whether the optical system is focused at the telephoto side or at the wide-angle side.

16. An image-sensing apparatus as claimed in claim 15,

wherein the generator, when the optical system is focused at the telephoto

side, generates a switching signal that brings the solid-state image-sensing device into the first state, and, when the optical system is focused at the wide-angle side, generates a switching signal that brings the solid-state image-sensing device into the second state.

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17. An image-sensing apparatus as claimed in claim 15,
wherein the optical system can be focused continuously between the wide-angle side and the telephoto side.

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18. An image-sensing apparatus as claimed in claim 15,
wherein the optical system includes a plurality of optical systems having different focal lengths, and at which position between the wide-angle and telephoto sides to focus the optical system is controlled by switching among the plurality of optical systems.

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19. An image-sensing apparatus as claimed in claim 1, further comprising:

an optical system that is focused on a subject to be shot selectively at least either at a wide-angle side or at a telephoto side,

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wherein the generator generates the switching signal on a basis of a shooting range to be shot by the solid-state image-sensing device through the optical system.

20. An image-sensing apparatus as claimed in claim 19, further comprising:

a measurement portion for measuring a distance to the subject to be shot;
and

a calculation portion for calculating the shooting range on a basis of the
distance to the object to be shot measured by the measurement portion and a
5 magnification of the optical system

21. An image-sensing apparatus as claimed in claim 1, further
comprising:

a brightness distribution evaluation portion for evaluating brightness
10 distribution of a subject to be shot on a basis of brightness signals obtained from
the individual pixels,

wherein the generator generates the switching signal on a basis of the
brightness distribution evaluated by the brightness distribution evaluation portion.

15 22. An image-sensing apparatus as claimed in claim 1,

wherein the pixels each include a photosensitive device having a first
electrode to which a direct-current voltage is applied and a second electrode, and a
transistor having a first electrode and a control electrode both connected to the
second electrode of the photosensitive device and a second electrode,

20 wherein the solid-state image-sensing device is switched between the first
and second states as a result of the switching signal from the generator causing a
potential difference between the first and second electrodes of the transistor of each
pixel to vary.

23. An image-sensing apparatus as claimed in claim 1,

wherein the pixels each include a photosensitive device having a first electrode to which a direct-current voltage is applied and a second electrode, and a transistor having a first electrode connected to the second electrode of the photosensitive device and a second electrode and a control electrode connected together,

wherein the solid-state image-sensing device is switched between the first and second states as a result of the switching signal from the generator causing a potential difference between the first and second electrodes of the transistor of each pixel to vary.

24. An image-sensing apparatus as claimed in claim 1,

wherein the pixels each include a photosensitive device having a first electrode to which a direct-current voltage is applied and a second electrode, and a transistor having a first electrode connected to the second electrode of the photosensitive device, a second electrode, and a control electrode to which a direct-current voltage is applied,

wherein the solid-state image-sensing device is switched between the first and second states as a result of the switching signal from the generator causing a potential difference between the first and second electrodes of the transistor of each pixel to vary.

25. An image-sensing apparatus as claimed in claim 1,

wherein the pixels each include a photosensitive device having a first

electrode to which a direct-current voltage is applied and a second electrode, a first transistor having a first electrode, a second electrode connected to the second electrode of the photosensitive device, and a control electrode, and a second transistor having a first electrode to which a direct-current voltage is applied, a second electrode from which an electric signal is output, and a control electrode connected to the second electrode of the first transistor,

wherein the solid-state image-sensing device is switched between the first and second states as a result of the switching signal from the generator causing a potential difference fed to the control electrode of the first transistor of each pixel to vary.

26. An image-sensing apparatus comprising:

a plurality of pixels individually including photosensitive portions that generate electric signals in accordance with amount of light incident thereon;

a conversion portion for logarithmically converting the electric signals generated by the photosensitive portions;

an evaluation portion for evaluating brightness distribution of a subject to be shot on a basis of a signal output from the conversion portion; and

a determination portion for determining a brightness range of the subject to be shot on a basis of the brightness distribution evaluated by the evaluation portion.